Notice of Allowability	Application No.	Applicant(s)	
	09/925,294	GEBHARDT ET AL.	
	Examiner	Art Unit	
	George L. Walton	3753	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to *the interview summary and the examiner's amendment*.

2. ☒ The allowed claim(s) is/are *12-30*.

3. ☐ The drawings filed on _____ are accepted by the Examiner.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All b) ☐ Some* c) ☐ None of the:
      1. ☐ Certified copies of the priority documents have been received.
      2. ☐ Certified copies of the priority documents have been received in Application No. _____ .
      3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

   * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.

6. ☒ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
   (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
      1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
   (b) ☒ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date 9/3/04.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

7. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3. ☒ Information Disclosure Statements (PTO-1449 or PTO/SB/08), Paper No./Mail Date 4/29/04
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application (PTO-152)
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date *9/3/04* .
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____.

EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Jeffrey M. Karmilovich on September 3, 2004.

The application has been amended as follows:

IN THE SPECIFICATION

Please amend the specification as follows:

Page 1: Please replace lines 1-7 (comprising the headings) and the paragraph starting at line 9 with the following:

~~ALF-66~~

Title of Invention

~~DE 100 40 310~~

Level Limit Valve

Field of Invention

~~Description~~

The invention concerns a level limit valve for the fuel tank of a motor vehicle. Such a valve is placed within the tank at the end of the intake pipe, which serves for the filling of the tank. Upon the attainment of a specified level of fuel, the valve is designed to close the intake pipe. When the intake pipe is thus closed, the fuel rises therein and triggers the feed nozzle to shut off. The closure of the intake pipe is assured by means of a pivoted flap shut-off in the valve body. This pivoted flap is coupled with a movable float on the valve body. At a low level of fuel in the tank, the flap opens, so that the fuel,

through valve intake and outlet ports, can again enter the tank. Toward the end of the filling process, the said float rises and moves the valve flap into its closed position, in which the flap seals the exit port.

Background of Invention

In the case of conventional valves, the flap is supported with a pivoting axle in the valve body, which extends outward, through provided openings in the valve body wall. The outward extending ends of the pivoting axles are respectively movably connected with the float by means of a lever arm.

Page 2: Please replace the paragraph starting at line 1 with the following and add the following heading:

Summary of the Invention

This purpose is achieved by means of a level limit valve with the features of the ~~Claim 1~~ the invention. In accord with these features, a movable coupling is provided between the flap and the float, in which, a lever rod reaches through the discharge port of the valve body, at least in the opened position of the flap. The said lever rod is moreover joined in a linked manner with the flap. The connection is made on the outer side of the flap, which is proximal to the discharge port of the valve. This embodiment makes possible, that the pivoting axle of the flap can be brought entirely within the valve body. Penetrative openings in the valve body, through which the pivoting axle is guided to the outside, are no longer necessary in the invented design. The liquid fuel, which, when the flap is closed, backs up in the filling pipe and shuts off the delivering nozzle, now has no more possibility of continuing to run into the tank. Thus, post-tanking as described, is thus prevented.

Page 3: Please replace the paragraph starting at line 22 with the following and add the following heading:

The float is movably set with bearings on a shaped float carrier at the end surface, in downstream of the valve body. The float is essentially installed to pivot in a vertical direction. A connection between the float and the flap is enabled by a through opening, located centrally in the upper side of the float carrier, which opening is

penetrated by a lever arm. This connection is particularly sparing of space in a vertical direction and carried out with very few linkages.

Brief Description of Drawings

Page 4: Please add the heading and replace the paragraph starting at line 9 with the following:

Detailed Description

The level limiting valve – hereinafter "valve" – presented in the above illustrations encompasses as its principal components:

- a tube section shaped valve body 1,
- a float carrier 2 connected with said valve body 1 on an end piece 31 in direction of the fuel flow,
- a float 3, movably set on said float carrier 2,
- a flap 4, inside the valve body, which is movably connected by means of a lever arm 5 to the float 3, and
- an intake fitting 6.

Page 4: Please replace the paragraph starting at line 26 with the following:

The valve body 1, on its top, is somewhat flattened, forming thereby a flat surface 8. In the case of the embodiment example in accord with Fig. 1, on this flat surface 8, an attachment element 9 is placed. The attachment element 9 possesses a top wall 10 which, when seen in the assembly operation, in a vertical direction from the said flat surface 8, is somewhat distanced therefrom. A through opening 11 has been made available in said top wall 10. For the fastening of the valve on the inside of an upper tank wall 13, this wall 13 exhibits an opening 14, in which a somewhat pot-shaped carrier 15 is inserted. The carrier 15 lies with a flange 16 on the outside of the tank wall 13, which flange 16 radially extends beyond the circumference of the carrier 15. Projecting from the bottom wall of the carrier 15, is found a pin 17, the free end of which forms a head shaped locking part 18. The shape of the through opening 11 in the carrier 15 and the shape of the locking part 18 are so chosen, that the locking part 18 can be inserted into the through

opening and after turning, perhaps some 90°, it engages the wall 10 from behind. On the free end of the float carrier 2 a further affixing device 9' is installed, which likewise, works in conjunction with an installed carrier 15' in a tank wall opening 14'. In the embodiment example in accord with Fig. 2, which is presented without the float 3 or the lever rod 5, a fastening element 9" is integrally attached which is associated with a wall 10" which has a through opening 11". This works together with a carrier 15 (not shown) installed in the upper tank wall 13. In case of necessity, additional fastening elements can also be provided on the valve housing 1 or on the float carrier 2. The carriers 15, 15' are welded in place in the final stages of the assembly procedure.

Page 5: Please replace the paragraph starting at line 28 with the following:

The flap 4 possesses a shape profile, which follows the cross-sectional shape of the corresponding outlet port 21 and also has in its upper rim, essentially, a straight line section 36 (see Fig. 3). On this said rim section 36, respectively on each side, is formed from an extending or cross piece 37, a pivot pin 33. The pivot pins 33 extend in the direction of an imaginary pivoting axis 38, which, during assembly, runs at right angles to the valve center axis 7 and parallel to the flat surface 8. Again in the assembly procedure, each pivot pin engages in a bearing seat 30, whereby, the body web 32 extends itself in each case into the intervening space 39 between the upper edge 36 of the flap 4 and the pivot pins 33 (Fig. 3E).

Page 6: Please replace the three paragraphs starting at line 6 with the following:

The float carrier 2, which retains the float 3, is essentially shaped as a trough. This carrier possesses an upper wall 40, upon which are formed lateral side walls 43, which, in assembly, extend vertically downward. On the outer surface of the wall 40, which is designed to be flat, are two pair of bearing projections 44, 45. The bearing projections 44 are located proximal to the free end 46 of the float carrier 2 and the bearing projections 45 are placed near to the valve housing 1. The bearing projections 44, 45 are spaced apart in the transverse direction 48 (see Fig. 2) and carry the bearing

eyes 47 for the pivoting bearing of the float 3 and the lever rod 5.

The float 3 is bearing supported with a parallelogram-linkage arrangement on the float carrier 2. This arrangement is constructed with two linkages, 49 and 50. The link 49 is basically an H shaped injection molding part, having two parallel legs 49a and one cross piece 49b binding these together. From the ends of the said parallel legs 49a, more exactly, from their outer surface, extend pivot pins 53, 54. The pivot pins 54 are held by the bearing projections 44. The two other pivot pins 53 are inserted in the bearing eyes 55 on the underside of the float 3. On the cross piece 49b of the linkage piece 49, a centrally located detent pin 56 forms an integral projection. This detent pin 56 coacts with a counter abutment 57, which extends out of the upper wall 40 of the float carrier 2. This detent arrangement serves for the limiting of the upward movement of said float 3. The lever rod 5 extends itself between a linkage lever 50 and a linkage lever 69. The linkage lever 50 is formed from a pivot axle 58 and two lever arms 59, 60 integrally placed thereon. The lever 59 comprises two parallel running connectors 63, the free ends of which are bound together by a pivot pin 64. The pivot pin 64 lies in a bearing eye, described in more detail below, of the float 3, while the pivot axle 58, inserts itself at the free end in the bearing eyes 47 of the bearing projection 45. The lever arm 60, on its free end, widens itself into a forked form, whereby the free ends of the fork legs 66 are bound together by a pivot axle 67. On this pivot axle 67 is a further linkage lever 69, secured with bearing in eye 68. The bearing eye 68 possesses a slot 71, which enables a snap connection with the pivot axle 67. On its distal end from the bearing eye 68, the linkage lever 69 possesses two pivot pins 70, pointing away from one another. The pivot pins 70 in turn, lie in the bearing eyes 73, which are located in the clips 74, projecting from the outer side 28 of the flap 3.

In the wall 40 of the float carrier 2 is provided a centrally located opening 75, extending itself in the direction of the center axis 7 up to the valve housing 1. On the longitudinal edges of this opening the bearing projections 45 are formed, which carry the linkage lever 50. The movement path of the lever rod 5, during the movement of the flap 3, in its open/shut position, extends itself through this opening 75.

Page 7: Please replace the paragraph starting at line 24 with the following:

In the illustrated view of Fig. 1, the float 3 is not immersed in fuel. The float 3 lies with its transverse walls 76 and 77 and with the flat projections 80 on the upper wall 40 of the float carrier 2. The flap 4 is now in its open position. So that the inflowing fuel in flow direction 20, through the inlet fitting 6 and through the valve housing 1, cannot move the flap 4 into its closed position, a flow diverter 83 is placed ahead (as seen in flow direction) of said flap 4. This is formed from an inclined piece 81 which is inclined away from the inner wall of the inlet connection fitting 6. As the end of the tanking process approaches, the fuel level reaches the float 3, so that this begins to float.

Page 8: Please replace the paragraph starting at line 21 with the following:

The above mentioned pivot pins, that is, pivot axles, and the bearing eyes which accommodate them, exhibit a relatively large amount of play, in order to make possible an easy movability of the combined parts. This easy movability, however, brings along with it, the fact that the float 3, can move itself in the direction of flow 93, especially upon impacts, such as the slamming of an auto door during the tanking procedure. This motion can be carried over into a upward float motion in accord with arrow 84. If this occurs, then the flap 4, would thereby move in the closure direction, that is, into the fuel feed flow. The fuel, which is then striking against the flap, would then close this flap 4 completely. This would have the result, that the feed nozzle outside would be shutoff, although the tank is not yet full. In order to prevent this, on the end of the float carrier 2 is placed a detent 88, on which the float 4, with its cross wall 76 strikes, in case of the said inadvertent sideways movement, i.e. as a result of the slamming of an auto door. The detent 88 is so positioned, that the inadvertent motion of the float 3 is stopped, before the flap 4 leaves the protective back cut area 89 of the flow diverter 83 and immerses itself in the flow of fuel. In the case of a normal float rise, on the other hand, the float rises without hindrance from the detent 88.

Page 13: Please delete page 13 (comprising the list of elements and reference numerals) in its entirety.

FORMAL DRAWINGS

Formal Drawings will be submitted no later than payment of the base issue fee for the instant application. This was acknowledged during the interview of September 3, 2004 with the attorney, Mr. Jeffrey M. Karmilovich.

IN THE CLAIMS

Please amend claims 12 and 20-24, all without prejudice or disclaimer, as set forth below.

12. (Currently amended) A level limit valve for the fuel tank of a motor vehicle, the valve comprising:

a valve body which can be positioned inside the fuel tank on the end of a fuel filling pipe, the valve body having an inlet port connectable to the filling pipe and an outlet port into the interior of the fuel tank;

a float carrier attached to a downstream end of the valve body;

a flap disposed in the valve body which is pivotally secured between a closed position which tightly closes the outlet port and an opened position which opens the outlet port;

a lever rod connected to an outer side of the flap;

a float movably connected to the flap via the lever rod for pivotally moving the flap, the lever rod penetrating through the outlet port when the flap is in the opened position, a central axis of the valve body and a pivot axis of the flap extending in an essentially horizontal direction, the float being disposed on the top of the carrier and being pivotally mounted to the carrier via a linkage so as to be vertically movable, the float carrier defining a centrally located opening through which the lever rod extends;

wherein the valve body is essentially in the form of a tube section, whereby on the end surface facing fuel flow, a transverse wall is present, the wall containing the outlet port, on the inside of which a sealing edge is placed which peripherally encompasses the outlet port and coacts with the flap; and

wherein two detent clips are located on an end of the inlet fitting extending in the

direction of fuel flow, the inlet fitting being connected to the filling pipe and connected to the inlet port of the valve body, the detent clips protruding through the inlet port into the interior chamber of the valve and fixing the pivoting pins in the bearing seats.

13. (Previously presented) A level limit valve as in Claim 12, wherein an escape boring is defined through the valve body connecting an interior valve chamber with the interior space of the fuel tank.

14. (Canceled)

15. (Previously presented) A level limit valve as in Claim 12, wherein the pivot axis of the flap is aligned with two pivot pins formed on the flap by cross pieces extending from the flap rim, whereby the pivot pins, pointing away from one another above the cross pieces in the pivot axis, engage in bearing seat on the inner side of the transverse wall.

16. (Previously presented) A level limit valve as in Claim 15, wherein the bearing seats are each made from a valve body web formed on the transverse wall inner side, the web extending into a space between the flap periphery and the pivot pin and being formed from the valve body wall.

17. (Canceled)

18. (Previously presented) A level limit valve as in Claim 12, further including a flow diverter placed in the direction of flow before the flap to prevent a direct impact of the kinetic force of the flow on the flap when the flap is in its opened condition.

19. (Previously presented) A level limit valve as in Claim 18, wherein the flow diverter is disposed in the connection fitting.

20. (Currently amended) A level limit valve as in claim 12, wherein the lever rod is pivotally mounted to the float carrier.

21. (Currently amended) A level limit valve as in claim 20, wherein the float, when floated by fuel, is pivotally movable off the float carrier as constrained by the lever rod and linkage.

22. (Currently amended) A level limit valve as in claim 21, wherein the lever rod and linkage are configured so as to provide a parallelogram linkage arrangement between the float carrier and the float.

23. (Currently amended) A level limit valve for the fuel tank of a motor vehicle, the valve comprising:

a valve body which can be positioned inside the fuel tank on the end of a fuel filling pipe, the valve body having an inlet port connectable to the filling pipe and an outlet port into the interior of the fuel tank;

a float carrier attached to a downstream end of the valve body;

a flap disposed in the valve body which is pivotally secured between a closed position which tightly closes the outlet port and an opened position which opens the outlet port;

a lever rod connected to an outer side of the flap and pivotally mounted to the float carrier; and

a float movably connected to the flap via the lever rod for pivotally moving the flap, the lever rod penetrating through the outlet port when the flap is in the opened position, a central axis of the valve body and a pivot axis of the flap extending in an essentially horizontal direction, the float being disposed on the top of the float carrier and being pivotally mounted to the float carrier via a linkage so as to be vertically movable, the float carrier defining a centrally located opening through which the lever rod extends, wherein the float, when floated by fuel, is pivotally movable off the float carrier as constrained by the lever rod and linkage, thereby moving the flap towards the closed position.

24. (Currently amended) A level limit valve as in claim 23, wherein the lever rod and linkage are configured so as to provide a parallelogram linkage arrangement between the float carrier and the float.

25. (Previously presented) A level limit valve as in Claim 23, wherein an escape boring is defined through the valve body connecting an interior valve chamber with the interior space of the fuel tank.

26. (Previously presented) A level limit valve as in with Claim 23, wherein the valve body is essentially in the form of a tube section, whereby on the end surface facing fuel flow, a transverse wall is present, the wall containing the outlet port, on the inside of which a sealing edge is placed which peripherally encompasses the outlet port and coacts with the

flap.

27. (Previously presented) A level limit valve as in Claim 26, wherein the pivot axis of the flap is aligned with two pivot pins formed on the flap by cross pieces extending from the flap rim, whereby the pivot pins, pointing away from one another above the cross pieces in the pivot axis, engage in bearing seat on the inner side of the transverse wall.

28. (Previously presented) A level limit valve as in Claim 27, wherein the bearing seats are each made from a valve body web formed on the transverse wall inner side, the web extending into a space between the flap periphery and the pivot pin and being formed from the valve body wall.

29. (Previously presented) A level limit valve as in Claim 23, further including a flow diverter placed in the direction of flow before the flap to prevent a direct impact of the kinetic force of the flow on the flap when the flap is in its opened condition.

30. (Previously presented) A level limit valve as in Claim 29, wherein the flow diverter is disposed in the connection fitting.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to George L. Walton whose telephone number is 703-308-2596. The examiner can normally be reached on M-F, 8:00-4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dave Scherbel can be reached on 703-308-1272. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-

direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

George L. Walton
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GLW